

CLAIM AMENDMENTS

IN THE CLAIMS

This listing of the claims will replace all prior versions, and listing, of claims in the application or previous response to office action:

1. (Currently Amended) A method for enhanced decision making based on optimization of a drilling system using an economic evaluation factor comprising:

generating a first economic evaluation factor for the drilling system by using an iterative drilling simulation of a well bore in a formation based on a drilling simulation model having at least one of the following formation characteristics selected from the group consisting of lithology, rock strength, shale plasticity and porosity and a drilling mechanics parameter;

determining whether the first economic factor achieves a desired optimization;

varying the drilling mechanics parameter of the drilling system based on the determination such that the iterative drilling simulation generates a second economic evaluation factor;

determining whether the second economic evaluation factor achieves the desired optimization;

selecting the drilling mechanics parameter from the group consisting of bit type, bit diameter, bit cutting structure 3D (three dimensional) model, bit work rating, bit junk slot area, bit total flow area (TFA), bit pressure drop, impact force, jet velocity and drill bit costs; [[and]]

continuing the iterative drilling drilling simulation of the well bore until the desired optimization is achieved[[]]; **and**

modifying the iterative drilling simulation to take into account drill bit enhancements.

2. (Cancelled)

3. (Cancelled) Please cancel Claim 3 without prejudice or disclaimer.
4. (Original) The method of Claim 1, further comprising generating a preliminary recommendation including a list of drilling equipment based on the drilling mechanics parameter of the drilling system that generated the economic evaluation factor that achieved the desired optimization.
5. (Original) The method of Claim 4, further comprising displaying the preliminary recommendation.
6. (Original) The method of Claim 4, further comprising viewing the preliminary recommendation on a computer monitor.
7. (Original) The method of Claim 4, further comprising specifying additional drilling equipment considerations for use with the drilling system of the preliminary recommendation such that the iterative drilling simulation generates a third economic evaluation factor for an additional preliminary recommendation.
8. (Original) The method of Claim 7, wherein additional drilling equipment considerations comprise potential component changes.
9. (Original) The method of Claim 7, wherein additional drilling equipment considerations comprise replacing a drill bit used in the drilling rig system.
10. (Original) The method of Claim 7, further comprising selecting an overall recommendation from the preliminary recommendation and the at least one additional preliminary recommendations based on the economic evaluation factor.

11. (Original) The method of Claim 10, further comprising displaying the overall recommendation in a compressed time animation, wherein a user may view a simulation of the drilling system drilling the well bore.

12. (Original) The method of Claim 10, further comprising formatting the overall recommendation in hardcopy, CD ROM, computer readable media, electronic file, holographic projection, compressed time animation, or any combination thereof.

13. (Currently Amended) A program product for enhanced decision making to recommend a drilling rig system using an economic evaluation factor to achieve a desired optimization of the drilling rig system comprising:

a computer-usable medium; and

computer instructions encoded in the computer-usable medium, wherein the computer instructions, when executed, cause a computer to perform operations comprising:

generating a first economic evaluation factor for the drilling rig system by using an iterative simulation of drilling a well bore in a rock column of a formation based on a drilling simulation model;

including a drilling mechanics parameter in the drilling simulation model;

selecting the drilling mechanics parameter from the group consisting of bit type, bit diameter, bit cutting structure 3D (three dimensional) model, bit work rating, bit junk slot area, bit total flow area (TFA), bit pressure drop, impact force, jet velocity and drill bit costs;

determining whether the first economic factor achieves a desired optimization;

based on the determination, varying the drilling mechanics parameter such that the drilling simulation model generates a second economic evaluation factor and determines whether the second economic evaluation factor achieves the desired optimization; [[and]]

generating at least one recommendation including a list of drilling equipment[[.]];

and

modifying the iterative drilling simulation to take into account drill bit enhancements.

14. (Cancelled)
15. (Cancelled) Please cancel Claim 15 without prejudice or disclaimer.
16. (Original) The program product of Claim 13, further comprising generating a preliminary recommendation including a list of drilling equipment based on the drilling mechanics parameter that achieved the desired optimization.
17. (Original) The program product of Claim 16, further comprising displaying the preliminary recommendation.
18. (Original) The program product of Claim 16, further comprising viewing the preliminary recommendation on a computer monitor.
19. (Original) The program product of Claim 16, further comprising specifying an additional drilling equipment consideration for use with the drilling rig system of the preliminary recommendation such that the iterative drilling simulation generates a third economic evaluation factor for an additional preliminary recommendation.
20. (Original) The program product of Claim 19, further comprising including potential drilling rig upgrades as the additional drilling equipment consideration.
21. (Original) The program product of Claim 19, further comprising replacing a drilling rig component used in the drilling rig system as the additional drilling equipment consideration.
22. (Original) The program product of Claim 19, further comprising selecting an overall recommendation from the preliminary recommendation and the at least one additional preliminary recommendations based on the economic evaluation factor.

23. (Original) The program product of Claim 22, further comprising displaying the overall recommendation in a compressed time animation, wherein a user may view a simulation of the drilling rig system drilling the well bore.

24. (Original) The program product of Claim 22, further comprising formatting the overall recommendation in hardcopy, CD ROM, computer readable media, electronic file, holographic projection, compressed time animation, or any combination thereof.

25. (Currently Amended) A method of enhanced decision making for the recommendation of a drill bit for a drilling system based on an economic evaluation factor comprising:

generating a first economic evaluation factor for the drilling system by using an iterative drilling simulation of a well bore in a formation based on drilling mechanics parameters of a drill bit used in the drilling system;

determining whether the first economic factor achieves a desired optimization;

based on the determination, varying the drilling mechanics parameter of the drill bit such that the iterative drilling simulation generates a second economic evaluation factor and determines whether the second economic evaluation factor achieves the desired optimization;

generating a preliminary recommendation based on the economic evaluation factor that achieved the desired optimization, the preliminary recommendation including a list of drilling rig components, such as the drill bit, selected from the group consisting of rotary table, top drive, drill string, drilling fluid pumps, bottom hole assembly, hoisting equipment, down hole motor, downhole turbine, rotary steerable system and drill bit for use in the drilling system;

modifying the iterative drilling simulation to take into account drill bit enhancements;
and

selecting at least one of the drilling mechanics parameter of the drill bit from a group consisting of a bit type, bit diameter, bit cutting structure 3D (three dimensional) model, bit work rating, bit junk slot area, bit total flow area (TFA), bit pressure drop, impact force, jet velocity and drill bit costs.

26-30. (Cancelled)

31. (Previously Presented) The method of Claim 25 further comprising selecting log data for use in the iterative drilling simulation from the group consisting of well logs, mud logs, core data and bit records.